

Brief Communication

Bronchoscopy for foreign body removal: where is the delay?*

Broncoscopia para remoção de corpo estranho: onde está o atraso?

Alexandre Garcia de Lima¹, Nelson Alves dos Santos²,
Elen Renate Figueira Rocha³, Ivan Felizardo Contrera Toro⁴

Abstract

This was a retrospective analysis of the medical charts of 145 patients treated at the Bronchoscopy and Thoracic Surgery Clinic of the *Hospital das Clínicas da Universidade Estadual de Campinas* (HC-Unicamp, State University of Campinas *Hospital das Clínicas*) over a period of 10 years. There was a significant difference related to the site of first medical visit (HC-Unicamp versus other institutions) in terms of the time elapsed between the suspicion of bronchial aspiration and the actual respiratory endoscopic examination. However, no significant difference was found in the rate of positive results. The low number of referral centers that provide emergency respiratory endoscopy can negatively influence the treatment of patients under suspicion of bronchial aspiration, jeopardizing the overall recovery in the mid- and long-term.

Keywords: Airway obstruction; Respiratory aspiration; Bronchoscopy.

Resumo

Analisaram-se retrospectivamente os prontuários de 145 doentes admitidos no Serviço de Broncoscopia e Cirurgia Torácica do Hospital das Clínicas da Universidade Estadual de Campinas (HC-Unicamp) num período de 10 anos. Houve diferença estatística relacionada com o local de consulta inicial (HC-Unicamp versus outros serviços) em termos do tempo gasto desde a suspeita de broncoaspiração até a realização do exame endoscópico respiratório. No entanto, não houve diferença significativa entre o índice de positividade do exame. O baixo número de centros de referência para endoscopia respiratória de urgência pode influenciar negativamente no atendimento a doentes com suspeita de broncoaspiração, piorando a evolução em médio e longo prazo.

Descritores: Obstrução das vias respiratórias; Aspiração respiratória; Broncoscopia.

Although endoscopic removal is an efficient and rapid means of treating cases of foreign bodies aspirated into the airways, there are risks.⁽¹⁾ The procedure can be performed only at facilities specializing in respiratory or perioral endoscopy. However, in Brazil, there are few facilities capable of performing emergency bronchoscopies. In parallel, the need for early examination when there is suspicion of bronchial aspiration, regardless of the clinical profile during the first emergency medical visit, is well known and has been widely discussed in the literature.⁽²⁻⁵⁾

Familiarity with this condition on the part of the physician who provides the initial treatment will promote early examination,⁽⁶⁾ which will reduce subacute and chronic complications, such as pneumonia, granulomas, and bronchiectasis, resulting from delayed foreign body removal.⁽⁷⁻¹⁰⁾

This case series was carried out in order to investigate the effect that the low number of referral centers at which respiratory endoscopy is performed, as well as the difficulty, in our region, in referring patients to such centers, has on the delay in providing the definitive treatment.

* Study carried out in the Department of Thoracic Surgery of the *Hospital das Clínicas da Universidade Estadual de Campinas* – HC-Unicamp, State University at Campinas Hospital das Clínicas – Campinas, Brazil.

1. Assistant Physician in the Department of Thoracic Surgery of the *Hospital das Clínicas da Universidade Estadual de Campinas* – HC-Unicamp, State University at Campinas Hospital das Clínicas – Campinas, Brazil.

2. Fourth-year Medical Resident in Thoracic Surgery at the *Hospital das Clínicas da Universidade Estadual de Campinas* – HC-Unicamp, State University at Campinas Hospital das Clínicas – Campinas, Brazil.

3. Third-year Medical Resident in Thoracic Surgery at the *Hospital das Clínicas da Universidade Estadual de Campinas* – HC-Unicamp, State University at Campinas Hospital das Clínicas – Campinas, Brazil.

4. Head of the Department of Thoracic Surgery of the *Hospital das Clínicas da Universidade Estadual de Campinas* – HC-Unicamp, State University at Campinas Hospital das Clínicas – Campinas, Brazil.

Correspondence to: Alexandre Garcia de Lima. Rua João Simões da Fonseca, 70, Condomínio Residencial Barão do Café 4, CEP 13085-050, Campinas, SP, Brasil. Tel 55 19 2117-3300. E-mail: dralexandregarcia@terra.com.br

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The medical charts of all patients admitted to the Bronchoscopy Clinic of the *Hospital das Clínicas da Universidade Estadual de Campinas* (HC-Unicamp, State University at Campinas *Hospital das Clínicas*) under clinical or radiological suspicion of foreign body aspiration into the lower airway from January 1, 1997 to December 31, 2006 were retrospectively analyzed. The medical charts selected were those in which the description of the procedure was complete, especially regarding the time elapsed between the initial treatment and the bronchoscopy.

Statistical analyses were performed using the Epi Info statistical program, version 6.04d. The unpaired Student's t-test was used, and the level of statistical significance was set at 0.05.

The study was approved by the Ethics in Human Research Committee of the Unicamp School of Medical Sciences (Ruling no. 208/2006).

From January of 1997 to December of 2006, the medical charts of 145 patients under clinical or radiological suspicion of bronchial aspiration and treated at HC-Unicamp Bronchoscopy Clinic met the aforementioned inclusion criteria.

The sample comprised 51 females (35.2%) and 94 males (64.8%). Ages ranged from 3 months to 67 years, with a mean of 5.19 ± 0.84 years. Only 11 patients (7.6%) were over 12 years of age, which is the age limit for distinguishing between pediatric and adult patients at our facility.

Of the patients who underwent bronchoscopy, 103 (71%) had been referred from other facilities, and 42 (29%) had sought treatment directly at HC-Unicamp. The patients came from 54 cities in five different states, and 31 (21.4%) were residents of the city of Campinas.

Among the 103 referrals, the initial working diagnosis was presence of a foreign body in the lower airway in 50. In 39 of those 50, the diagnosis was confirmed. It took 4 to 5,760 h (mean, 318.12 ± 128.07 h) for those patients to arrive at HC-Unicamp. Those patients for whom the initial working diagnosis was not bronchial aspiration, but who, at some point, underwent bronchoscopy in order to rule out presence of a foreign body in the airway, were diagnosed with pneumonia of unsatisfactory clinical and radiological evolution, persistent atelectasis, recurrent pneumonia in the same lung lobe, lung hyperinflation, or airway bleeding.

Of the 42 patients initially treated at HC-Unicamp, 33 received an initial working diagnosis of presence of a foreign body. In this group, the bronchoscopy was performed after an interval ranging from 2 to 48 h (mean, 11.0 ± 2.0 h). The remaining 9 patients, for whom the initial working diagnosis was not bronchial aspiration, but who, at some point, underwent bronchoscopy in order to rule out presence of a foreign body in the airway, met the same indication criteria described above.

The diagnosis of bronchial aspiration was confirmed taking into consideration only the initial working diagnosis of foreign body aspiration, that is, in 50 patients in the group of those referred to HC-Unicamp and in 33 patients in the group of those treated directly at HC-Unicamp (78% and 78.8%, respectively; $p = 0.97$).

Bronchial aspiration of a foreign body continues to be a major cause of respiratory morbidity and is a leading cause of accidental death before the age of 3 years, there being no evidence that its incidence is decreasing.⁽¹¹⁾ The boy/girl ratio is usually 2:1, and the clinical profile is rarely typical. The team providing the initial treatment should always pay attention to a history of choking, asphyxia, sudden cyanosis, wheezing without a history of bronchospasm, or atelectasis, as well as infection profiles or pulmonary consolidations that do not present satisfactory evolution.

The clinical profile, however, can be benign, and the patient can be asymptomatic during the initial treatment. Anamnesis should be guided, and, when there is suspicion of bronchial aspiration, bronchoscopic examination should be ordered even without clinical indication or radiological alterations.

The importance of early diagnosis and treatment in order to prevent mid- and long-term complications, which are usually irreversible and lead to loss of lung tissue, has been discussed at length in the literature,^(2,7,12) and we are of the same opinion. It has been argued that suspicion depends on familiarity with the clinical and radiological profile of bronchial aspiration on the part of the physician who provides the initial treatment, and the lack of such familiarity has long been considered the principal cause of delayed diagnosis. However, our study showed that the degree of suspicion of a foreign body and the rate of positive results were the same when the working diagnosis was made at our facility as when it was made at other hospitals.

Therefore, the low number of referral centers capable of performing emergency respiratory endoscopies can negatively influence outcomes in cases of bronchial aspiration, since the degree of clinical suspicion is similar among the health care facilities in our region. In this study, the patients with an initial working diagnosis of presence of a foreign body in the lower airway who were treated at our facility underwent bronchoscopy, on average, 11 h after the event, compared with 318 h for those referred from other facilities.

Many factors can influence this delay: lack of information provided to the centers that are responsible for hospital bed allocation; lack of hospital beds; neglect of asymptomatic patients; and the need for interhospital transfers involving long and expensive transport—we treated patients from 54 different cities located in five different states.

In our view, the frequency of bronchial aspiration, as reported in the literature, is not high enough to justify the establishment of a respiratory endoscopy center in every secondary-care hospital. However, we clearly see the need for expanding this field of advanced medicine, since a considerable number of cases have been reported in the USA, where epidemiological control is more rigid.^[3,4,13]

Therefore, broad and constant dissemination of information about this imminent danger in early childhood, together with an increase in the number of training centers and health care centers that provide respiratory endoscopy would, in our view, improve the treatment of such patients, thereby reducing the complications resulting from bronchial aspiration of foreign bodies.

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